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Soil and Water Conservation News

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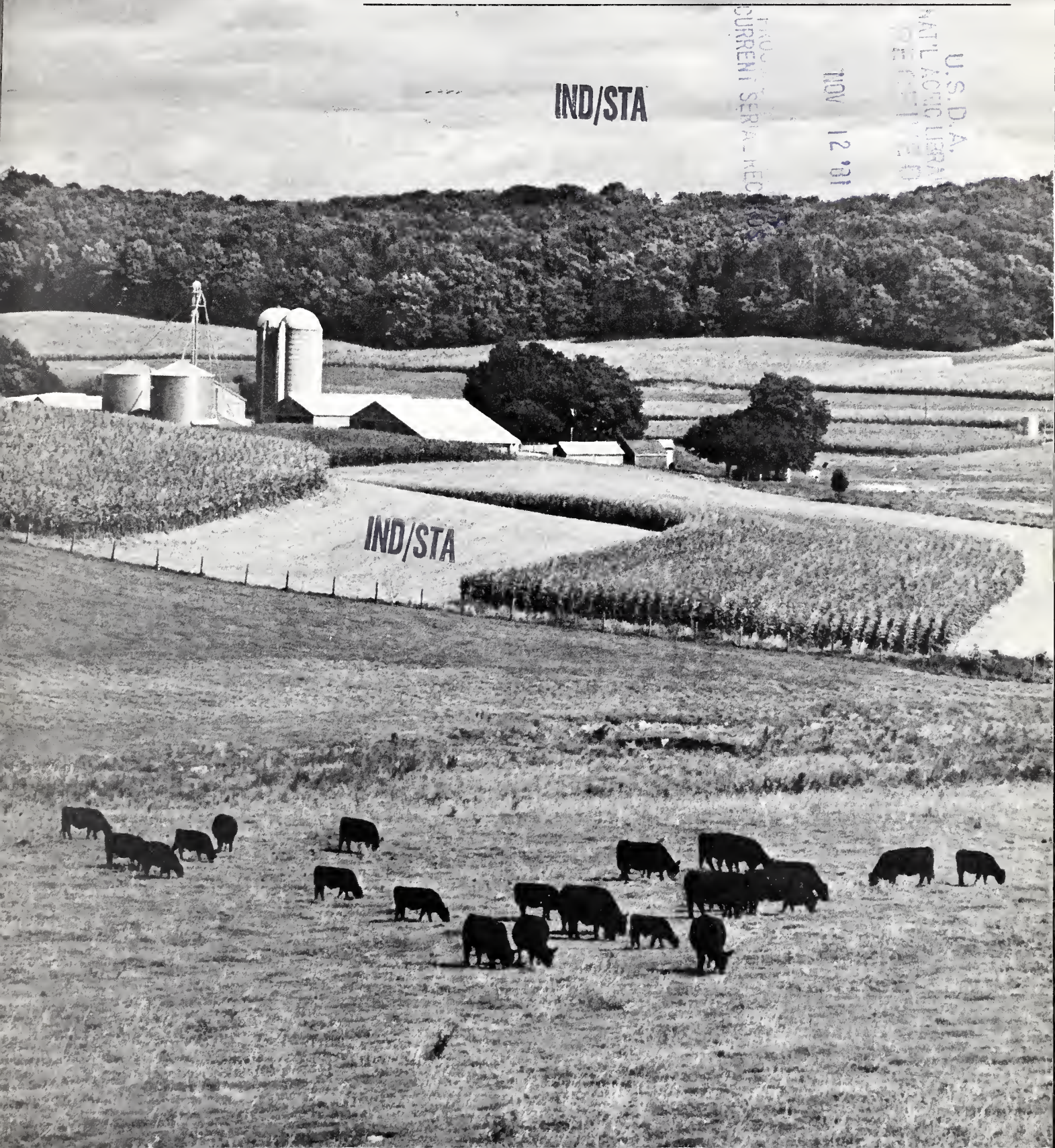
Soil Conservation Service



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Comments:

From the SCS Chief

The Soil Conservation Service has adopted two priority goals for the next 5 years: (1) reducing soil erosion where current rates exceed tolerable levels and threaten long-term soil productivity, and (2) reducing upstream flood damages which could reach a projected cost of $3.3 billion by the year 2000.

We in SCS are committed to furthering research efforts in reducing soil erosion and applying new erosion control technology as it is developed. Armed with our know-how and experience in soil erosion control, we are also committed to helping farmers and ranchers apply the most cost-efficient conservation measures available. Where soil erosion is severe and where annual flood damages are a threat to agriculture and rural communities, SCS is targeting more soil erosion reduction efforts and stepped-up watershed protection and flood prevention assistance.

While these are two top priorities for SCS action, we will also continue—as time and budgets permit—to recognize and meet the need for water conservation, improved water quality and fish and wildlife habitat, urban and community development, energy conservation, and managing organic wastes. Reductions in erosion and flooding, of course, will also help achieve several of these secondary goals.

Our priorities reflect the findings of the resource appraisal of the Soil and Water Resources Conservation Act of 1977 (RCA) and the comments that emerged from public review of the RCA draft documents early in 1980. SCS received half a million individual public comments related to conservation objectives.

Effective soil and water conservation programs have never been more important to the United States than they are today. Meeting projected demands for food and fiber at home and abroad will require an accompanying conservation effort to protect soil resources from excessive erosion.

At the 36th annual convention of the Soil Conservation Society of America, Ray Lett, special assistant to Agriculture Secretary John Block, said, "Soil and water management must continue as long as people engage in agriculture. It is not a finite task that will someday be complete and last forever. It is not primarily a Federal program. It is everybody's program, everybody's concern—including those who produce our food and fiber and those who consume it."

Cover: Conservation practices such as the contour stripcropping and pasture management on this Carroll County, Md., farm will help the Soil Conservation Service meet its two priority goals (see Chief's Comments). (Photo, Tim McCabe, photographer, Information and Public Affairs, SCS, Washington, D.C.)

John R. Block
Secretary of Agriculture

Norman A. Berg, Chief
Soil Conservation Service

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News Briefs

Six Watershed Projects to Receive Planning Assistance

Watershed projects in Idaho, Illinois, Indiana, Maine, Ohio, and Oklahoma were approved recently to receive planning assistance from the U.S Department of Agriculture.

Norman A. Berg, chief of USDA's Soil Conservation Service, said the people in local offices of the agency will provide help to sponsors of the six projects under the Watershed Protection and Flood Prevention Act of 1954.

Assistance includes investigations and surveys necessary to develop plans to protect the watersheds from erosion and siltation and to prevent flooding.

Some small watershed projects also provide fish and wildlife habitat, improved public water supplies, and increased water-based recreation opportunities for the public.

The newly authorized projects are:

- Hazelton Butte watershed, Jerome County, Idaho;
- Ash-Loop Creek watershed, St. Clair County, Ill.;
- Bruce Lake watershed, Fulton and Pulaski Counties, Ind.;
- Sebasticook Lake watershed, Penobscot and Somerset Counties, Maine;
- Upper Killbuck Creek watershed, Medina and Wayne Counties, Ohio;
- Deer Creek watershed, Blaine, Caddo, Custer, and Dewey Counties, Okla.

Focus on Safety: Driving in Changing Weather

In many parts of the country, this is the time of year for changing weather. You can find yourself driving in rain, snow, sun, freezing rain, and fog all in the same day.

Roads can be wet, dry, or icy. Visibility can be good, fair, or greatly reduced. The smart driver is prepared to adapt to any weather condition.

If you get into rain or suddenly hit a stretch of wet road, reduce your speed at least 10 miles per hour or even more, depending on conditions. Freezing rain can be especially dangerous; allow more following distance. If it's daytime and clouds have made it dark, it may be a good idea to turn on your lights.

Fog requires reduced speed, too. Use your low beams in a fog and turn on your windshield wipers to clear condensation. Keep to the right as much as possible, using the right-hand side of the road as a guide.

One of the most effective weapons you have against the hazards of changing weather conditions is slower speed. You'll have more time to see and be seen, more time to react, and more space in which to stop. Cut your speed and step up your caution to meet weather changes safely.

James Engleka,
safety and health manager, SCS, Washington, D.C.

New Hampshire Conservation Districts Help Wildlife

This past March the Strafford and Carroll County Conservation Districts (CD's) in New Hampshire sponsored a project to improve 50 acres of deeryard habitat in the White Mountain National Forest. On two different weekends 90 volunteers removed preselected trees to let more sunlight reach the forest floor. This promotes sprout growth—an excellent deer food.

USDA Forest Service Assistant Ranger for the Carroll County District, Quintin Mack, demonstrated the girdling method of tree removal. In this method, the bark is removed from the tree's circumference, killing the tree. Besides letting in sunlight, the dead trees will provide dens for other wildlife, and brush piles left from the work will provide habitat for small game.

Representatives from State, local, and Federal agencies—including the Soil Conservation Service, Forest Service, and the New Hampshire Fish and Game Department—volunteered their time for the project.

Bob Hussey, former chairman of the Strafford County CD, originated the idea of the deeryard improvement project. He contacted most of the volunteers in person, by phone, or at a meeting. He said that this is the best way to get people involved in a volunteer project. The Strafford County CD provided buses to transport the volunteers to the work site.

Hussey received letters thanking him and the 90 volunteers for their work on the project from the director of the New Hampshire Fish and Game Department, Charles E. Barry, and USDA Forest Service District Ranger, Steve Parsons. In his letter Barry said that in a time of fiscal restraints such volunteer efforts are especially appreciated.

Maureen Stabile,
former program coordinator, Strafford County Conservation District, Dover, N.H.

SCS Engineer Honored by Alma Mater

In 1976, a Soil Conservation Service student trainee received the highest honor given to a senior woman at Montana State University—an invitation to return in 5 years and address the Women's Day of Recognition assembly.

Sanna Yost, now an SCS engineer in Whitehall, Mont., in her address to the 600 people who attended the assembly last May, told how she chose to work for SCS over jobs that paid $5,000 a year more. She added that "As the months and years go by, I know I made the right choice; but, believe me, it was a tough decision."

She was selected for the honor because of her college activities, professional potential, and promise for future achievement.

Yost believes that equal employment laws and affirmative action plans are necessary to open some traditionally closed doors, yet it is the individual performance that matters on the job.

Traditionally women were viewed as less technically skilled, not as well accepted by coworkers and the public, and therefore less effective on the job, she told the assembly.

"I'm happy to say that time has shown this isn't the case. I've found that contractors and the clientele I work with make a special attempt to do their best work for me. Oh, they test me at first, but I no longer think it's because I'm a woman. It's because I'm new, and they test my male counterparts as well.

"As soon as we've reached a mutual respect for each other's technical skills, good working relationships are formed which produce wonderful results."

The civil engineering graduate worked as a student trainee for SCS in Grand Forks, N. Dak., and Bozeman, Mont., before graduating. She then worked in the Missoula, Mont., area office and Helena, Mont., field office before taking the project engineer job in Whitehall.

Brad Anseth,
public information officer, SCS, Bozeman, Mont.

Search Is on for CCC Alumni

The National Association of Civilian Conservation Corps Alumni (NACCCA) is trying to locate former CCC members and others who were associated with the CCC during the thirties and forties. For more information, write to NACCCA Headquarters, 7900 Sudley Road, Suite 418, Manassas, Va. 22110.

All-Female Crew Assists Rhode Island Counties

Newport, R.I., is not just another New England resort town; and the staff of the Eastern Rhode Island Conservation District and Soil Conservation Service field office is not just another conservation crew.

Newport boasts some of the most affluent and exciting recreational, cultural, and social activities on the East Coast. Another of eastern Rhode Island's resources is more than 27,000 acres of prime and important farmland.

The Newport field office boasts the expertise of the first all-female conservation unit for SCS: District Conservationist Kristine Stuart, Conservation Technician Polly Gardner, and Conservation District Secretary Virginia Boyd.

Stuart, who has worked at the field office the longest, joined SCS in 1975 as a conservation aid in Acton, Mass., then transferred to Rhode Island in 1976. She worked on special projects at the State office and later joined the Greenville field office staff. In 1979, she transferred to the Newport office where she was promoted to district conservationist last May.

Gardner has worked for SCS for nearly 2 years and has been working in her present position since January. Boyd began working for the district 2½ years ago.

This all-female team has the challenge of working in Newport and Bristol Counties, two of the most rapidly developing areas in Rhode Island with close to one-third of the State's important farmlands.

Ellen Balasco,
former editorial clerk, SCS, W. Warwick, R.I.

GPCP Celebrates Its 25th Anniversary

On August 7, soil conservation leaders gathered at a North Dakota research station near Streeter to mark the 25th anniversary of the law that authorized the Great Plains Conservation Program (GPCP).

Since 1957, GPCP has brought wind and water erosion control to more than 110 million acres in 10 States stretching from Wyoming to Texas.

North Dakota rancher Berthold Sackman and the Soil Conservation Service signed the initial contract in December 1957.

The day's ceremonies honored Sackman and other Great Plains "pioneers" at the Central Grassland Research Station, formerly the Sackman Ranch, where that first contract was signed.

As SCS State Conservationist Mike Nethery (left) looks on, U.S. Senator Mark Andrews (N. Dak.) unveils a bronze plaque commemorating the 25th anniversary of the law that authorized the Great Plains Conservation Program. More than 300 farmers, ranchers, and conservation leaders gathered near Streeter, N. Dak., for the ceremony.

Shedding Light on the Economics of Conservation

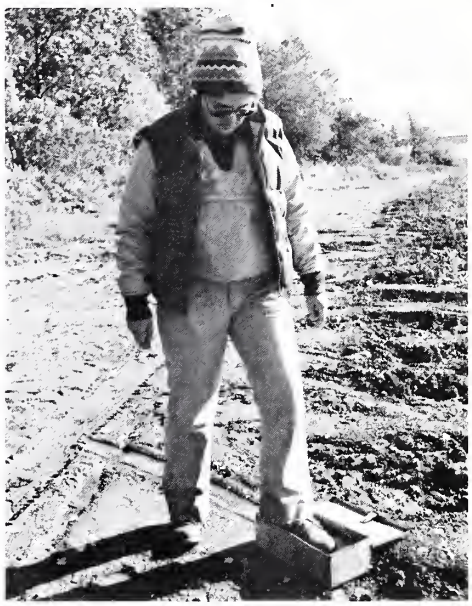
by Russell P. Kaniuka

Conservation saves soil, but what are the economic costs and benefits to farmers who practice it and the public who helps pay for it? A highly detailed 3-year study—the first of its kind—is underway in Maine to find out. Its outcome is of interest to various segments of society.

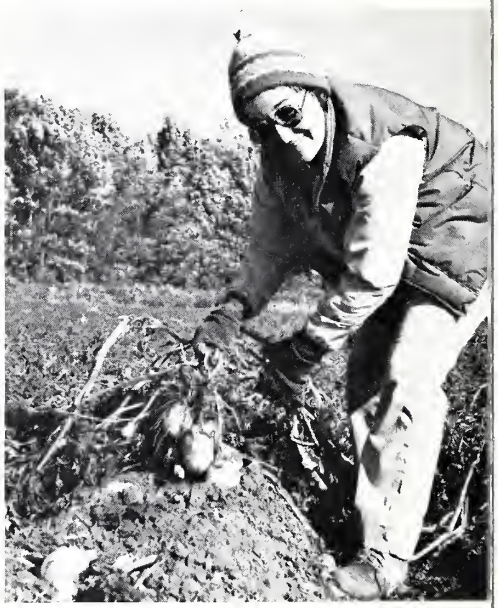
Until now, conservationists and farmers have been able to demonstrate and measure the effectiveness of conservation practices in reducing erosion. But left unanswered are such important questions as: What are the measurable effects of conservation practices on yield and quality of crops? What combination of crop management practices produces yields of high quality while controlling erosion? How does practicing conservation affect farm income? These are among the questions addressed by the Field Appraisal of Resource Management Systems study, better known as FARMS.

The study involves 2,400 statistically selected points in Aroostook County, which has Maine's highest concentration of row crop farmland. Eight hundred points will be visited during each year of the study. Data gathered include past and present crop history, description of soil profile, collection of soil for lab analysis, fertilizer and lime usage, types and amounts of pesticide applied, and weighing and checking crops for yield and quality.

Although FARMS requires a large field force, its success ultimately hinges on the willingness of farmers to allow sampling of soil and crop at each point. Such cooperation is readily given. Last year, the Soil Conservation Service worked with about 100 different farmers throughout the three Aroostook County soil and water conservation districts (SWCD's), visiting roughly eight sampling points per farmer. Each point, how-



At left, SCS Engineering Technician Linwood Holmquist takes directional bearing to locate one of the sample points for FARMS.



Above left, SCS Soil Conservationist Pauline Paré carefully disinfects shoes before entering crop fields. Above, Paré hand harvests potatoes at one of the sample points.

ever, will be visited only once.

Disciplines serving FARMS include not only conservationists but also soil scientists, agronomists, economists, statisticians, plant materials specialists, and others. Last year's efforts, covering the first year of the study, resulted in filling out some 12,000 data sheets. The task of feeding this information into a computer is now underway. Early results indicate that last year 56 percent of Aroostook County cropland was in potatoes, 26 percent in oats, and the rest mainly in peas, hay, and buckwheat.

Full analysis of FARMS data awaits completion of the study, but several early findings are noteworthy. There is an alarmingly high rate of potato culls—ranging from 20 to 25 percent. The underlying reasons are being studied. Biological life in the soil has diminished as evidenced by only one earthworm noted at 800 sample sites. And soil pH values range widely, from 3.7 to over 7.

When completed, FARMS will enable farmers to estimate how much they can recover of costs spent for participating in incentive programs for conservation. Legislators will have scientific data for more fairly allocating the costs of conservation between farmers and taxpayers. And agricultural leaders will have better data for devising conservation policies and programs that are more acceptable to farmers and taxpayers, thereby insuring the continued productivity of the Nation's farmlands.

FARMS is a joint effort of SWCD's, the St. John Aroostook Resource Conservation and Development Steering Committee, SCS, Extension Service, University of Maine, Maine Department of Agriculture, and other organizations.

Russell P. Kaniuka,
public information officer, SCS, Orono, Maine

SCS Soil Conservationist Dana Nelson notes weight of oat sample taken from one of the sample points.

Conservation Aid Albertine Henderson, Central Aroostook SWCD office, readies crop samples for processing.

CONSERVATION Research Roundup

Research Center Studies Conservation Tillage

by Donald L. Comis

The Southern Piedmont Conservation Research Center in Watkinsville, Ga., advocates rotating tillages as well as crops to support conservation tillage.

Scientists at the center say that both tillages and crops can be rotated within the same year in a multiple crop system. Conventional tillage such as disk harrowing may be only occasionally necessary some years for most field crops and is best done when rainfall intensities are normally low—late summer to early fall in the Southern Piedmont and upper Atlantic Coastal Plain.

After several years of continuous no-tillage at the center, the scientists say they have seen problems with weeds that may need to be solved with conventional tillage. They have also seen soil compacted by heavy animal grazing during the winter and spring that may need disking or some form of minimum tillage before planting the summer crop.

Dr. George Langdale, a soil scientist at the center, says that weeds, soil erosion, and compaction have lowered crop yields after years of continuous conventional tillage in the Southern Piedmont.

No-tillage will help the soil erosion problem, but innovations such as the inrow chisel may be necessary to solve soil compaction problems. And scientists must develop new weed control technology to solve the weed problems.

The Southern Piedmont Center of the U.S. Department of Agriculture, Agricultural Research Service (ARS), is testing conservation tillage systems, including weed control, to find the best systems to increase productivity in the eroded soils of the Southern Piedmont.

The Southern Piedmont Center currently uses three types of conservation tillage machines that are suitable for the soils and crops of the Southeast. In the fall, the center uses a direct drilling machine that has smooth coulters set at an angle and close together to plant narrow rows of small grains, grasses, and legumes.

For summer annuals, such as soybeans, sorghums, and corn, the center uses either a machine with an inrow chisel and serrated coulters or a machine with fluted and smooth coulters in tandem. The machine with tandem coulters can be pulled through fields by a smaller tractor than the machine with the inrow chisel, but the inrow chisel has to be used on compacted soils.

In 1972, Dr. Langdale and colleagues set up a watershed experiment to measure soil loss and rainfall runoff. They grew soybeans for 2 years using a disk harrow as the primary tillage tool. The watershed lost 26 tons of soil per acre per year and about 18 percent of the annual rainfall in runoff. In October 1974, the ARS scientists used the no-tillage machine with tandem coulters to plant barley, followed by grain sorghum. This tillage/cropping system reduced soil erosion to 0.1 ton or less per acre per year and reduced rainfall runoff to about 8 percent.

Then Dr. Langdale, in 1977, switched the tillage system from tandem coulters to the inrow chisel implement with serrated coulters. The inrow chiseling in small grain mulch kept soil erosion down to 0.1 ton per acre per year and further reduced the amount of annual rainfall lost in runoff to about 3 percent.

In 1979, Dr. Edward Robinson, a plant physiologist, came to the Southern Piedmont Center. He and Dr. Langdale immediately began a rotation experiment, testing three tillages and two herbicide levels and types in a matrix of 192 plots, using every conceivable crop rotation, in 4-year cycles, from continuous grain sorghum to continuous soybeans. This ongoing rotation experiment is part of a national weed research program at 45 ARS locations in cooperation with land grant universities.

The center, a Soil Conservation Service soil erosion station until 1953, has studied many soil erosion problems including conservation tillage since the early 1950's. The center has conducted some of the Nation's significant studies of pesticide runoff, vegetation for erosion control, grass-based rotations, terraces, contour tillage, and grassed waterways.

Dr. Langdale believes that farms in the Southern Piedmont should have approximately 5 percent of their row-crop land in grassed waterways. Grassed waterways carry excess rainwater away from fields to an outlet without eroding soils.

"You're going to lose the soil if you till areas that can be put into grassed waterways, so you might as well use the areas for something productive. With grassed waterways, you can harvest grass seed or bale hay, and you can filter out a lot of pollutants that might get into streams and estuaries," says Dr. Langdale.

Dr. Langdale is especially proud of a feat that some said was impossible: conservation-tilled crops planted up and down hills, parallel

to the grassed waterways, rather than following the land's contour. The research center has done this successfully for the past 7 years. "If we run farm machinery parallel to the grassed waterways, we can be more efficient and protect the waterways from equipment traffic and pesticides. We could not do this with conventional tillage," Dr. Langdale said.

However, some strategically located terraces may be necessary on some Southern Piedmont lands even with conservation tillage.

After World War II, the discovery of an economical way to synthesize nitrogen from air spurred the use of nitrogen fertilizers, and the center responded by studying ways to use fertilizers effectively. Now that the cost of fertilizers has risen, researchers are beginning again to study nitrogen fixation and utilization with legumes.

The center works closely with the University of Georgia, and shared research results suggest that winter legumes such as crimson clover can provide adequate quantities of plant-fixed nitrogen, for the spring planted grain sorghum crop that is planted in the clover residue. Grain sorghum usually requires about 90 pounds of nitrogen per acre per year.

The problems of soil erosion and the high costs of fuel in the 1980's make Dr. Langdale excited by future prospects for conservation tillage systems using new technology. He said the farming industry is in the middle of a dramatic revolution in tillage machines and practices that will make the moldboard plow a form of unconventional tillage.

Dr. Robinson is also enthusiastic about conservation tillage and guesses that farmers will use conservation tillage on 80 percent of the Nation's cropland by 2000, but only if researchers can develop consistent weed control year after year.

Donald L. Comis,
assistant editor, *Soil and Water Conservation News*, SCS, Washington, D.C.

Above, for summer annuals the center uses a machine with serrated coulters and an inrow chisel for compacted soils.
At right, Dr. Langdale checks a device that records data for a watershed experiment on rainfall runoff and soil loss.

Controlled Traffic

by Russell P. Kaniuka

Today's heavy farm equipment literally packs the soil it rides over. Wherever the soil has been compacted, roots cannot fully fill the plant's needs for water and nutrients, and crop yields suffer. Because the compacted soil is less permeable, water runs off the fields instead of being absorbed, increasing the possibility of soil erosion.

Soil Scientist Albert C. Trouse of the National Tillage Machinery Laboratory, Auburn, Ala., has pioneered research on controlled traffic patterns in crop fields. He has designed a system to minimize the area over which farm equipment can exert pressure on soil.

Dr. Trouse began formulating his controlled traffic concept about 30 years ago when several sugar companies in Hawaii designated him to determine why cane yields fell from about 120 to 26 tons per acre after heavy equipment was introduced to replace a hand-laboring system. His findings proved that the yield-reducing culprit was soil compaction.

Indiscriminate traffic with heavy equipment following tillage had rendered most of the surface of the sugar plantations with soil much less permeable to air and water. Ensuing anaerobic conditions excluded root growth from most of the soil's tilled zone. Consequently, much of the fertilizer incorporated into the soil remained beyond the plant roots' reach.

Soil compaction problems persist on many mainland farms as well. "Running tractors up and down every row restricts lateral root development, while traffic soles formed during tillage restrict their vertical development. This means that we're essentially farming little strips only 8 or 9 inches deep and 13 inches wide," said Dr. Trouse.

Georgia Grows Peaches on Throwaway Trees

by Donald L. Comis

Scientists at the University of Georgia at Athens are testing a disposable peach orchard that is at least as productive as a conventional peach orchard, produces a first crop 3 years sooner, and grows a dense canopy that may protect the soil from rainfall erosion.

In 1978, Dr. Gary Couvillon, a plant scientist at the University of Georgia, used rooted cuttings to plant 3,900 'Redhaven' peach trees on a 1-acre plot, compared to 100 grafted trees that growers would plant on 1 acre in conventional orchards.

He planted the cuttings 1 foot 8 inches apart within the row with 6 feet 8 inches between rows, instead of conventional spacings of approximately 22 feet within the row and 22 feet between rows.

Every summer, beginning in 1979, Dr. Couvillon used large pruning shears to cut down all the trees 5 to 10 inches from the soil surface.

During 1979 and 1981, the orchard yielded an average 20,000 pounds of peaches per acre, including 18,000 pounds of normal market-size peaches (2 inches or larger in diameter). Conventional orchards in Georgia yield approximately 14,000 pounds of peaches per acre, with only 10,000 pounds of market size.

After cutting down the trees in 1979, the researchers put too much fertilizer on the orchard and the peach trees did not bear an economical crop in 1980. Learning from this first experience, the scientists used less fertilizer and got an economical crop again this year.

"Learning how to handle fertilizers with trees that have been cut back is one of the big problems of this new orchard that we're working on," Dr. Couvillon said.

If peach growers adopt this new orchard, they will use machines that will cut or uproot the trees, separate the peaches, and grind the trees for mulch. A prototype of a mechanical harvester for this type of orchard has been developed and tests have proved it to be successful.

With this harvesting method, there is very little fruit bruising compared to the "shake and catch" mechanical harvesters currently being developed for harvesting conventional peach orchards.

The possibility of almost complete mechanization and a shorter waiting period for the first harvest after planting attracted Dr. Couvillon to this new orchard, called a meadow orchard, which he saw in Israel in 1978.

Dr. Couvillon says that a shortage of skilled labor for orchards and a short lifespan for Georgia's orchards have dropped the State from first to third place in the Nation in peach production. Georgia produces about half as many peaches today as it did 30 or 40 years ago.

Orchard growers in Georgia abandon their orchards after many of the

He found that soil prepared for a seedbed is most vulnerable to compaction, while unplowed soil is only slightly packed by traffic. Thus, restricting machinery to a few permanent, narrow paths will dramatically curtail the surface area compacted by machines.

With machinery always traveling in the same tracks—and the tracks spaced more widely—much more moisture remains in the field to be available for plant growth in the untracked portions of the field. And equally important, the controlled traffic system also results in less runoff and less erosion.

To space traffic paths more widely, Dr. Trouse and his colleague Lyle Carter of Shafter, Calif., envision a light, self-propelled frame, called a spanner, which would straddle up to 10 rows at a time. Such a spanner, which measures approximately 8-feet long and 60-feet wide, would have wheels that turn more than 180 degrees, permitting it to travel lengthwise along paved roads.

All equipment used for farming operations would be mounted on the spanner's frame. As the spanner travels through the field, all downward thrust of the equipment would be fully controlled, and pressure exerted by the total weight of spanner and equipment would be confined where it belongs—the permanent travel path.

Without forces being applied to the soil between the traveled paths, the soil can remain loose and permeable—eliminating the need for annual tillage. Controlled traffic systems are being experimentally expanded to develop a totally new permanent no-till, no-traffic farming system of agriculture.

Russell P. Kaniuka,
public information officer, SCS, Orono, Maine

trees die from unknown causes that scientists call peach tree decline syndrome. The peach tree decline syndrome became a serious problem in the 1950's and gave Georgia's orchards an average lifespan of 8 years.

In 8 years, the peach tree meadow orchard produces 3 more harvests than the conventional orchard because it produces its first crop in the second year after planting, 3 years earlier than the conventional orchard.

Because the trees in a meadow orchard are planted close together, they compete for nutrients and water more intensely and bear fruit quicker and in greater quantity than the trees in the sparsely planted conventional orchard. The meadow orchard peach trees bear fruit from the ground up while conventional orchard peach trees start bearing fruit more than 5 feet above the ground.

Because their trees are smaller than trees in conventional orchards, peach tree meadow orchard growers eliminate pruning and working on ladders.

The meadow orchard has other benefits. Growers could possibly uproot the trees and replant them after harvest or rotate them with soybeans, vegetables, or grass to avoid problems with the peach tree decline syndrome, the phony peach virus, nematodes, and soil-borne diseases.

The canopy of the thickly planted trees might slow soil erosion by softening the impact of the intense rainfalls that occur from April to July in the Southern Piedmont and upper Atlantic Coastal Plain. A trickle irrigation system, rather than a sprinkler system, used with this new orchard adds to the water conservation and potential soil erosion control benefits during this vulnerable soil erosion season.

But there are problems that need to be solved before commercial growers can adopt the peach tree meadow orchard. Somebody must develop new equipment to spray pesticides on meadow orchards. Researchers need to know how much fertilizer and water to apply after cutting down the trees.

"We hope to solve these problems in 3 to 5 years. First, we have to train peach orchard growers to grow their own tree cuttings or find someone who will grow and sell the cuttings at a price that meadow orchard growers can afford," Dr. Couvillon said.

"Today growers would pay about $4,000 for enough tree cuttings to cover 1 acre. We're hoping to get that down to $400 per acre," Dr. Couvillon said.

Donald L. Comis,
assistant editor, *Soil and Water Conservation News,* SCS, Washington, D.C.

Georgia Saves Watershed Resources

by Donald L. Comis

The Soque small watershed project in Habersham County in northeastern Georgia is a very active project in a State that ties with Arizona for second place in the Nation for the number of small watershed projects completed.

Five out of nine dams in the Soque watershed project have been built with assistance from the Soil Conservation Service, which administers small watershed projects for the U.S. Department of Agriculture under the Watershed Protection and Flood Prevention Act (Public Law 566).

The Soque River and its tributaries rush from the base of the Blue Ridge Mountains through 84,055 acres, mostly cropland and forest land, on their way to the Chattahoochee River. Ira Linville, Soil Conservation Service area conservationist, said there is a great need for watershed projects in this mountainous area because the runoff flows so rapidly, carrying tons of soil with it.

Before these dams were built, more than 5,000 acres of the Soque watershed, including farmland, was subject to periodic flooding, and more than 31,000 tons of sediment was delivered each year to the lower parts of the watershed. The watershed also had critically eroding areas on roadbanks, farmland, and urban and industrial sites.

Linville said that the Soque watershed's local sponsors worked unusually hard to get the land rights for the dams quickly and that is why the project is nearly completed.

Alvin Alexander is one local farmer who worked "day and night" to get the land rights for most of the dams that were built.

Alexander has a 200-acre dairy farm about a quarter of a mile below the dam at the headwaters of Beaverdam Creek, a tributary of the Soque River. In 1963, the bridge to Alexander's dairy farm washed out four times in 3 months, twice in 10 days. The floods prevented the milk truck from picking up Alexander's milk.

One day, during the worst flood, Alexander had to drive his tractor across Beaverdam Creek to meet his five children as they got off the school bus because the bridge across the creek to his farm was underwater. Alexander carried the children, one at a time, across the waist-deep creek, holding on to a rope that was tied to his tractor and to a fence on the other side of the creek. The next morning, the bridge to his farm and 4 feet of the creek bank were gone.

Besides restoring the lifeline to

Located a quarter mile upstream from Alvin Alexander's dairy farm, the storage reservoir and dam control flooding of Beaverdam Creek. The lake normally covers 10 acres but can store enough water during floods to cover more than 40 acres. The concrete two-stage riser (lower right) regulates the flow of water through the dam.

his dairy farm and home, the dam allows Alexander to grow corn and fescue grass on his best land, Beaverdam Creek's flat bottom land.

Ernest Nations, chairman of the Upper Chattahoochee Soil and Water Conservation District which is a local sponsor of the Soque and other watershed projects, says he bought a parcel of land near Alexander's farm only for the flood-free bottom land it included.

Alexander and Nations are 2 of the 171 landowners, owners of 464 farms in the Soque watershed, who will directly benefit from the watershed project when it is completed.

Along with the ability to double-crop year-round on the bottom land without fear of winter and early spring flooding, the dam allowed Alexander to move his corn from steeper land to the bottom land and to convert the former cornfields to pastureland to protect the steeper land from erosion.

This change in land use, from cornfields to pastureland, is one of many land treatment practices that are an essential part of the watershed project. Alexander's farm has other examples of land treatment measures: conservation tillage, tile drainage, an animal waste treatment lagoon, and a farm pond.

Alexander stressed that he's convinced that watershed projects are "worthwhile. Because if we don't take care of the resources we've got, we're whipped."

Donald L. Comis,
assistant editor, *Soil and Water Conservation News,*
SCS, Washington, D.C.

As his grandson looks on, Alexander tells how he carried his children, one at a time, across Beaverdam Creek when a severe flood covered the bridge to his farm in 1963. That year the bridge washed out four times in 3 months.

SCS Revises Policy on Watershed Protection Projects

On June 4, 1981, the Soil Conservation Service revised its policy on small watershed protection projects to delegate part of the SCS Chief's project approval authority to State conservationists.

This policy only affects projects that provide watershed protection through the use of land treatment measures, not projects to prevent floods with dams or other structures. These watershed protection projects are limited to $1 million in Public Law 566 (Watershed Protection and Flood Prevention Act) cost-sharing funds.

The new policy should speed up project approval and allow State conservationists more flexibility to solve critical watershed problems. After the SCS Chief approves the project for planning, the State conservationist can approve the project for construction.

The first project under this new policy is the Johnson Creek watershed project in Washington.

SCS developed this new policy in cooperation with the Agricultural Stabilization and Conservation Service (ASCS) so that SCS's small watershed protection projects would complement ASCS's Agricultural Conservation Program on critically eroding areas.

Management Tips

Readers are invited to submit "Management Tips" to the editor, *Soil and Water Conservation News*, Soil Conservation Service, P.O. Box 2890, Washington, D.C. 20013.

Land Use Symposium Draws People From Two States

"Public information is one of the most important tasks of conservation districts, especially in urban areas where the one-on-one approach is next to impossible," said Leon Lallier, chairman of the Mid-America Association of Conservation Districts (MAACD).

When the MAACD organized 9 years ago, one of its major goals was to develop natural resource information projects that would focus on the public's role in making decisions about natural resources, especially in urban development. The MAACD, which covers eight counties in Missouri and Kansas, considers the public to include State and local elected officials, businesses, unions, neighborhood groups, developers, environmentalists, and others interested in natural resources.

To keep these people informed about current issues in land use, the MAACD holds an annual Land Use Symposium. Topics have included agricultural land retention, energy and land use, how urban land use affects water quality, using soils data for effective urban planning, urban stormwater management, erosion and sedimentation control, septic tank problems, solid waste management, working with the urban forest environment, floods of the future, and enhancing urban wildlife.

The symposium lasts 1 day and a $2 registration fee is charged (lunch is optional and costs $4 more). After each lecture or panel presentation, time for a question-and-answer period is always provided.

Lallier believes that the success of the annual event can be credited

It's Not All Thunder and Lightning

Build two model farms, one with conservation practices applied and one without. Make it rain on both to show the effect of the conservation practices and what happens without them. Tape a short narrative explaining how each conservation practice works. Add thunder and lightning for effect. And keep it small, portable, and within a budget of $100.

That is the formula that the Kandiyohi County Soil and Water Conservation District in Minnesota used to build an educational—and very popular—conservation display.

Built by District Supervisor Franklin Clough and Soil Conservation Service Soil Scientist Al Giencke, the display measures only 60 by 30 inches and weighs just 150 pounds. But in that small space are two realistic-looking farms. One has conservation practices, including terraces, waterways, conservation tillage, diversions, drop structures, ponds, field and farm windbreaks, wildlife plantings, and contour strips. The other farm has gullies, rills, siltation, and much more runoff. Each of the conservation practices and erosion problems is labeled.

Scale model farm buildings, trees, livestock, and culverts are used on both farms.

A system of plastic tubes, spray nozzles, and a recirculating water pump produces rain and circulates the water in a completely self-contained system. Some of this hardware is concealed in a plastic hood over the display, and the rest is placed out of view under the table.

On the conservation farm, the practices actually store water on the surface and reduce runoff. On the other farm, runoff is faster and more obvious.

Two concealed light bulbs flash as lightning, and a tape provides 40 seconds of narration and 20 seconds of thunder.

"The thunder and lightning add realism to the rainfall but are probably more valuable as a gimmick to attract attention," said Clough. "The action in the display attracts children, and when their parents come to pull them away, they get interested too."

Giencke believes that the reason the display is so effective is because it allows people to see how conservation practices actually work—a feature that is not part of most conservation displays.

The display can be set to run continuously by itself, but the conservation district has found it more effective to have someone in the display booth.

"By switching on the thunder and lightning one can entice even the casual observer to move closer to inspect the display," Giencke said.

Giencke and Clough estimate that they worked a total of 150 hours building the display. The frame is made of two-by-four's and plywood. The rough landscape on each farm is carved from Styrofoam and covered with plastic brick mortar. Ever-faithful to his soil science

to audience participation: "All districts in the MAACD make a special point to invite key community decisionmakers. That way suggestions are made to people who can act on them. As a matter of fact, many questions are shot point blank to people in the audience."

"We hope people come away from the symposium with a better understanding of the importance of a good land use policy, one which recognizes individual property rights as well as the value of land as a resource which must be used wisely," said Douglas Smith, board chairman of the Mid-American Regional Council.

Sponsorship of the symposia has grown from four agencies in 1973 to include: the MAACD, Kansas and Missouri Extension Services, Soil Conservation Service, Mid-American Regional Council, two chapters of the Soil Conservation Society of America, League of Women Voters, Independence Neighborhood Councils, Kansas City District of the Corps of Engineers, U.S. Fish and Wildlife Service, Citizens Environmental Council, and the Extension Homemaker Councils of four counties.

The Land Use Symposium is just one activity generated by the MAACD. Others include producing model environmental ordinances, regional planning assistance, and technical training programs for decisionmakers in municipalities and units of government.

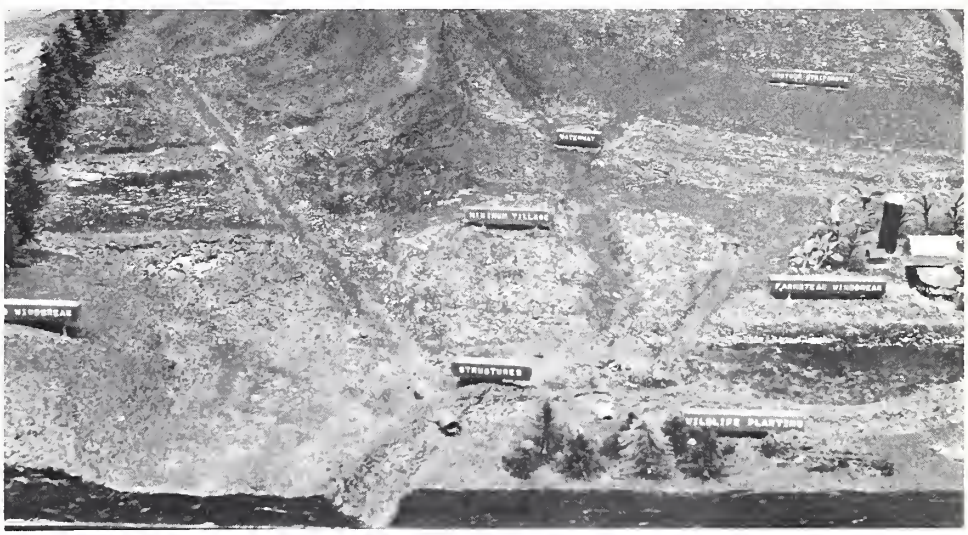
The MAACD has found that crossing conservation district and even State boundaries to combine forces strengthens its information program and allows it to reach more people.

Robert J. Brechja,
resource conservationist, SCS, Independence, Mo.

profession, Giencke selected the paint to match the soil colors in the county. Building materials cost about $110.

Since its debut at the county fair a year ago, the display has been in nearly constant use throughout the State. The conservation district is renting it to other conservation organizations and can provide construction plans to anyone interested.

Tom Gahm,
public information officer, SCS, St. Paul, Minn.



One-half of the conservation display (top) shows poorly managed land and water damaged by sheet erosion, streambank erosion, and runoff from a livestock feedlot. The other half (bottom) shows land adequately treated with conservation practices, such as field and farmstead windbreaks, conservation tillage, contour stripcropping, and terraces.

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Meetings

November	2-5	Geological Society of America, Cincinnati, Ohio
	8-11	National Agricultural Bankers Conference, Washington, D.C.
	8-11	National Association of State Universities and Land Grant Colleges, Washington, D.C.
	8-11	National Forest Products Association, San Diego, Calif.
	8-12	American Institute of Chemical Engineers, New Orleans, La.
	9-16	The National Grange, Spokane, Wash.
	12-14	Future Farmers of America, Kansas City, Mo.
	15-18	American Society of Farm Managers and Rural Appraisers, Louisville, Ky.
	21-24	American Society of Landscape Architects, Washington, D.C.
	29-Dec. 4	American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, Atlanta, Ga.
December	1-3	National Farmers Organization, Indianapolis, Ind.
	1-3	Western Forestry Conference, Sun Valley, Idaho
	7-11	American Society of Agricultural Engineers, Chicago, Ill.
	7-11	Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation, Lexington, Ky.
January	3-8	American Association for the Advancement of Science, Washington, D.C.
	10-14	American Farm Bureau Federation, San Diego, Calif.
	22-28	North American Gamebird Association, Honolulu, Hawaii

New Publications

Economics, Ethics, Ecology: Roots of Productive Conservation

by the Soil Conservation Society of America

This publication is based on material presented at SCSA's 1980 annual meeting held in Dearborn, Mich. The 454-page book reflects the concern that conservation in North America be looked upon as an economic and ethical issue as well as an ecological one.

The book features 47 papers by notable natural resource leaders in government, the academic community, and the private sector. It begins with an overview of the economic forces, ethical precepts, and ecological principles affecting current conservation efforts. The focus then turns to three important issues confronting North American nations—land planning, water management, and the implications of energy development for land and water. The future of natural resource use is discussed next.

This book is available for $10 ($8 to members of SCSA), postpaid, from the Soil Conservation Society of America, 7515 N.E. Ankeny Road, Ankeny, Iowa 50021.

Soil Erosion

Edited by M. J. Kirkby and R. P. C. Morgan

This is the first research-level volume on soil conservation and soil erosion to be produced in the United Kingdom. It concentrates on the application of basic principles of erosion processes to erosion control and is the first text to effectively combine the work of geomorphologists and agricultural engineers. In so doing it combines British, European, and American approaches to the problem.

The authors who have contributed are all active in soil erosion research, and bring a range of current viewpoints together.

The text covers such topics as, the Universal Soil Loss Equation and how it may be used and developed further, methods of measuring erosion and the carrying out of laboratory and field experimentation, approaches to erosion modeling, and the implications of these to practical erosion control. Water and wind erosion are both covered in depth.

Copies are available for $67, plus postage, from John Wiley & Sons, Inc., Order Department, One Wiley Drive, Somerset, N.J. 08873.

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